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2018-01-26

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Gritsenko , D 2018 , Energy development in the Arctic : resource colonialism revisited . in A Goldthau , M Keating & C Kuzemko (eds) , Handbook of the International Political Economy of Energy and Natural Resources . Handbooks of Research on International Political Economy series , Edward Elgar , pp. 172-184 . <https://doi.org/10.4337/9781783475636.00020>

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<http://hdl.handle.net/10138/310394>

<https://doi.org/10.4337/9781783475636.00020>

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Forthcoming in: A. Goldthau, M. Keating, C. Kuzemko (eds.), 2017. *Handbook of International Political Economy of Energy and Natural Resources*, Edward Elgars.

## **Energy Development in the Arctic: Resource Colonialism Revisited**

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As accelerated climate change can offer easier access to the Arctic resource riches, many countries, including the non-Arctic states, are now considering the Arctic as a viable future source of enormous energy supplies and valuable minerals. This Chapter explores the current conversations on Arctic energy futures through the lens of resource colonialism. Focusing on the intertwined politics and economics of Arctic energy, it shows how ongoing Arctic developments have been shaped by expectations, decisions and events taking place outside the Arctic region. It is argued, that a contradictory relationship between energy and environment accompanying the persistent interest in Arctic resource wealth marks a shift in the international political economy of energy from 'old' to 'new' carbon governance.

### **1. Introduction**

The natural wealth of the Arctic is immense. According to the U.S. Geological Survey, an estimated thirteen percent of the world's undiscovered oil and thirty percent of gas resources are located beyond the Arctic Circle (USGS 2008). Mining companies operating in the Arctic are extracting a wide variety of minerals, including coal, copper, diamonds and gemstones, gold, iron ore, lead, nickel, palladium, uranium and zinc. The Arctic Ocean also contains valuable fish stocks, such as cod, arctic char and flatfishes. In parallel with the receding icecaps, that holds out a promise of an easier access to the diversity of Arctic resources, the global economic landscape has been expected to extend further towards the High North (Young, 2011). Many countries, including the non-Arctic states, are now considering the Arctic as a viable future source of enormous energy supplies and valuable minerals (Jakobson and Lee, 2013). These economic opportunities are juxtaposed against concerns over the degradation of the Arctic's natural environment which is intensifying as the climate warms and which, in turn, highlights the need for sustainable development as a means of protecting the Arctic environment and improving socioeconomic well-being (Einarsson et al., 2004).

The question informing this chapter is, therefore, how possible it is to pursue sustainable development underpinned by the logic of expansive commercial resource exploitation? This Chapter will focus on the intertwined politics and economics of Arctic energy to show how ongoing Arctic developments have been shaped by expectations, decisions and events taking place outside the Arctic region. It will examine the incorporation of the Arctic into the international political economy by framing contemporary Arctic energy development as resource colonialism. Resource colonialism is understood here as economically driven discourses, programs and policies that promote extractive activity on the periphery and are administratively backed up by an ideology from the center concerned with expansion of state power (Young, 2001). The origins of the new global resource colonialism can

be traced back to historic activities and interests that have nurtured asymmetrical power relations in the Arctic resource arena over the past four centuries (Stuhl, 2016). This discussion will reveal how current resource colonialism discourse, or a totality of ideas, beliefs and practices that conceives the Arctic as a space simultaneously “empty, but full” (Bridge, 2001), inherently contradicts those environmental narratives that inform contemporary Arctic sustainability discourse.

## **2. Defining the Arctic**

There are many ways that the 'Arctic boundary' can be drawn on the map and this adds a degree of complexity to analyzing, governing and understanding the Arctic political economy. In physical geography the area above the Arctic Circle ( $66^{\circ} 34' N$ ) is commonly defined as the Arctic region, whilst the northern limit of tree growth (the Arctic tree line) and the average daily summer temperature below  $10^{\circ} C$  are among alternative delimitation criteria used in natural sciences (Smithon et al., 2002). In global politics, the Arctic usually denotes the circumpolar territories belonging to the eight Arctic states: Canada, Finland, Greenland (Denmark), Iceland, Norway, Russia, Sweden and United States. In terms of human geography, the Arctic is inhabited by about four million people residing in the area of the circumpolar North, consisting of the islands and parts of the continent surrounding the Arctic Ocean. The Arctic Council, an intergovernmental forum established in 1996 in order to promote cooperation, coordination, and interaction among the Arctic States, has adopted a pragmatic governance approach to defining the Arctic region: the working groups of the Arctic Council create boundary lines relevant for their particular mandate. For example, the Arctic Monitoring and Assessment Program (AMAP) defines the Arctic in respect to the area where it carries out environmental monitoring under the Arctic Environmental Protection Strategy, whereas the Arctic Human Development Report (AHDR) defines a boundary based largely on northern political units providing relevant socio-economic data.

Defining the Arctic is pivotal to establishing a governance regime and structuring future developments (Koivurova, 2010), and it is significant that most Arctic States have adopted their own definitions of the Arctic zone. The sub-Arctic territories, or the most northern territories of the eight Arctic countries, are often included into the ‘Arctic region’ when it comes to political matters due to their socio-ecological characteristics: cold temperatures, darkness, remoteness, and scarce population. For instance, the U.S. Congress has decreed that all of the Bering Sea, which extends southward to about  $53^{\circ} N$ , is part of the Arctic for internal U.S. planning and budgeting purposes (NOAA, n/a). According to the Finnish definition, although Finland has no coastline on the Arctic Ocean, much of its territory lies north of the Polar Circle, and the whole of Finland takes a keen interest in the Arctic region as far as the economy, skills and competence, education and training and research are concerned (VNK, 2013). In Russia, a law that defined the southern border of the Arctic Zone has been passed in 2014, enumerating the territories based on administrative units (regions, provinces, cities) (Presidential decree, 2014). These definitions are central to the domestic discussions over Arctic resource development, as they touch upon the issues of land use and land rights, the conflicts between the local indigenous populations and the expansive strategies of national and international energy companies (Stammler and Wilson, 2006).

Apart from defining how far the Arctic stretches southwards, the sub-sea rights and maritime boundaries in the Arctic Ocean represent another strategic matter for the Arctic littoral states. These

issues are regulated by the United Nations Convention on the Law of the Sea 1982 (UNCLOS), which all Arctic states besides the US are parties to. Each Arctic state that has ratified the UNCLOS has a right to claim jurisdiction over a larger area of the Arctic by demonstrating that its continental shelf extends further than 200 nautical miles from its shores, which gives the rights to potentially valuable subsea exploration. To make a claim, a country must submit bathymetric, seismic, and geophysical data to the United Nations Commission on the Limits of the Continental Shelf (UNCLCS), as has been done by Russia, Canada, Denmark (Greenland) and Norway. The International Seabed Authority is responsible for the administration of extraction from the seabed outside of the coastal states jurisdiction. At the moment of writing (Autumn 2016), no decision from UNCLCS on the current claims was available.

These multiple, complex definitions of the Arctic demonstrate that often the term “Arctic” tends not to convey a strictly defined geographical knowledge, but rather is used to suit specific scientific or political purposes at points in time. Defining the scope of the Arctic can be seen as an attempt to impose order upon the physical space, but it is also linked to identifying the properties of this space and constructing its image. The romantic Western imaginaries of the Arctic as a space for exploration and mastery over nature have been gradually complemented by narratives of the Arctic as a vulnerable environment that needs to be protected and preserved (Doel et al., 2014). In addition, the variety of Arctic communities have an own definition and understanding of their homeland (Huggan, 2015). Indeed, local representations, including indigenous peoples and settlers from other regions, demonstrate diverse and often conflicting interests and images of the Arctic and its future (Brody, 1976; Nuttall, 2000). Thus, the Arctic as a space can be grasped through a range of asymmetrical power relations revealed by such representations as resourcefulness (right to conquer and subjugate, exploration, appropriation), remoteness (from the main centers of consumption, finance, decision-making), and traditionalism (cultural domination and acculturation, development, modernization). Through the lens of resource colonialism incurred by these representations the Arctic appears as a global resource base. As the next Section will show, in the most recent iteration of the Arctic resource colonialism, the estimates provided in the U.S. Geological Survey (USGS 2008) gave rise to a world-wide Arctic energy hype (see for example Emmerson, 2010).

### **3. Arctic resource endowment**

According to the latest evidence, humans may have entered the Arctic as long ago as 45,000 years in order to hunt mammoth (Pitulko et al., 2016), and ever since have continued to inhabit the area. For many centuries people living in the Arctic engaged with traditional livelihoods, such as reindeer herding, hunting and fisheries, and most of the Arctic indigenous communities continue similar lifestyle today (Nuttall, 2000). Yet Arctic riches have also been attracting people from other places to come and try their luck in harvesting this natural wealth and the continuity and persistence of their interests can be captured through considering the history of Arctic exploration as a part of human energy history.

The history of active Arctic exploitation by the Europeans starts during the late Middle Ages. They discovered the wealth of Arctic marine mammals whilst searching for new routes to the riches of the Far East by exploring the Northeast and Northwest passages (Duarte and Wassman, 2011). In the middle of the 16<sup>th</sup> century demand for whale oil grew in Europe, driven by industrial growth that

heavily relied on whale oil as an illuminant in lamps and as candle wax. Europeans hunted Arctic whales, walruses and seals for their fur, blubber, skin, and meat so extensively, that “from 1669 to 1800, 86,644 whales were killed by English, Dutch, and German whalers in the seas around Jan Mayen and Spitsbergen”, bringing the population of bowhead whales in the North Atlantic to the verge of extinction within two centuries (Avango et al., 2014, p. 20). The shift away from renewable sources of energy continued in the 19<sup>th</sup> century, when kerosene from coal (coal oil) and from petroleum steadily replaced whale oil.

Mining in the High North also dates back to the early modern period, when Scandinavian kingdoms moved northwards to explore and exploit raw materials (mainly, silver and copper) propelled by economic and political interests (Naum and Nordin, 2013). The real boom started, however, in the 19<sup>th</sup> century when the Klondike Gold Rush brought prospectors and adventurers from all over the world to Alaska and Yukon. In the Swedish Arctic, open pit iron ore mining began at Kiruna in the 1890s and during the same time, as the international coal prices peaked, the first attempts to mine coal for commercial purposes was made on Svalbard at Bohemanflya in the Isfjorden (Avango et al., 2011; McGhee, 2007). Gold, iron ore and coal were not the only desired resources: in the later 19<sup>th</sup> century, oil prospectors started their activities in Alaska. Oil production in Alaska dates as far back as 1911, when the Chilkat oil company built a small topping plant at Katalla Slough (Naske and Slotnick, 2014, p. 150). By the mid-20<sup>th</sup> century, commercial oil and gas production has been pursued in the Arctic zone of the Western Siberia (Tazovskoe field), Alaska (Prudhoe Bay Field), and Canadian Arctic Archipelago. During this time, developed and large proportion of developing countries almost completely switched to non-renewable energy sources, primarily hydrocarbons and coal, thereby intensifying demand for fossil fuels and significantly expanding hydrocarbon industry.

This has had particular relevance for the Arctic. According to the most recent US Geographical Survey (USGS, 2008), the Arctic could contain 90 billion barrels of oil, 1,670 trillion cubic feet of recoverable natural gas, and 44 billion barrels of natural gas liquids. More than 70 percent of the undiscovered natural gas is thought to exist in three main areas - the West Siberian Basin, the East Barents Basins, and Arctic Alaska, and almost 84 percent of these resources are expected to be offshore. Until recently, only onshore oil and gas deposits in the Arctic have been explored. Yet indications given by USGS 2008, together with expectations of sea ice retreat caused by climate change and high oil prices (peaking at almost USD150 per barrel in July 2008), have accelerated interest in the development of the Arctic shelf. Commercial interest in Arctic hydrocarbons went far beyond Arctic states to include interest from China, Japan, South Korea, India and other Southeast Asian states, where energy demand has increased by more than 50% between 2000 and 2013 (EIA, 2015). Until 2015, Russia, Norway and the US were widely preparing for exploration and production activities in the Arctic offshore regions, but the oil price fall since late 2014 and the Paris Climate Agreement at COP21 in December 2015 appear to have somewhat reduced expectations of large scale hydrocarbon development in the Arctic.

At the same time, however, there is mounting interest in Arctic marine bio-resources (Wolman, 2016). Whereas 90% of all biomass is in the sea, the current use of marine resources is marginal. In the future, however, marine animals and plants may become the primary source of materials for the production of food, drugs, (bio)fuels, materials, cosmetics (Hoag, 2009). The Arctic Ocean also has significant potential for renewable energy generation, including use of tidal currents and wind. Thus,

one way or another, the Arctic remains high on the agenda of future energy development, and both Arctic and non-Arctic states pursue research and development that could enable harvesting the potential of the Arctic resourceful environment. Whereas global relations are not new for the circumpolar north, the scale and dynamics of globalization in the Arctic is increasingly intensive (Heininen and Southcott, 2010).

For the past four centuries, access to the Arctic has meant access to natural resources. At each given point in time, the Arctic supplied raw materials that fueled accelerating industrialization in Europe, and later in the North America, and Soviet Union. The logic of resource consumption from deposits distant from the industrial centers that transform them into commodities is, arguably, the primary logic of globalization as a process of “materio-spatial expansions and intensifications, which are driven by historically reiterated economies of scale made possible by technology” (Bunker and Ciccantell, 2005, p. 9). The perception of the Arctic as a global resource base that has been perpetuated for centuries not only integrates the Arctic into the global economy, but also accentuates resource colonialism as a set of economic strategies underlying postindustrial capitalism. However, if the questions of Arctic energy development are both economic and political in nature then who should benefit from Arctic resource development and who shall decide upon the future of Arctic exploration and maintaining the sustainability of its environment?

#### **4. The political economy of Arctic energy development**

The image of a remote, inhospitable, poorly accessible, yet resourceful Arctic can be compared to the legend of El Dorado, a mythical place where unspoken wealth can be rapidly acquired. An illustration can be obtained from 17<sup>th</sup> century Arctic a trade colony, Mangazeya, founded by cossacks from Tobolsk on the Taz River, between the lower courses of the Ob and Yenisei Rivers flowing into the Arctic Ocean. Mangazeya was referred to as “gold-boiling”, as it accumulated furs, walrus tusks and other valuable goods to be shipped out to European Russia and Western Europe (Belov et al., 1980). Similar “El Dorado” imaginaries can be found in representations of Svalbard, Alaska and Yukon, Yakutia, Yamal, and, most recently, the Arctic Ocean seabed and its biomass (Young, 2010). Yet today some commentators are skeptical about the financial viability of future large-scale exploration of the Arctic resources, warning that “fantastic opportunities” are based on a mixture of sketchy information, unproven models and geopolitical ambitions.

The high cost of Arctic oil and gas production coupled with the growing viability of alternative energy sources in the global energy mix and the global drop in oil prices, significantly undermined the interest in Arctic energy development for many private investors. Yet, the plans for Arctic energy have not been completely abandoned at the state level in Norway or Russia and, after Trump’s election, re-appeared in the US. This begs the question of whether Arctic energy development can eventually be profitable and why states maintain their pursuit of the Arctic hydrocarbons?

Though Arctic technology has made significant progress in the past thirty years, possibilities for exploration of Arctic oil and gas deposits as commercially profitable ventures remain restricted (Budzik, 2009). Infrastructure for resource extraction and transportation constitutes the most significant cost factor in Arctic energy development. It has been estimated, that the average cost of

oil production in the Arctic is 75 USD per barrel, whereas in the Middle East (Saudi Arabia, Iraq, Iran) a barrel equivalent costs around 10 USD and in the Russian West Siberian fields around 20 USD (Bashir, 2015; Wall Street Journal, 2016). Offshore development in the Arctic is subject to significant expenses, including costly ice management that requires satellite monitoring and icebreaking capacity. Indeed private energy companies that lack adequate resources need to cooperate with state-owned providers, as is currently the case for Norway and Russia, to receive support in ice management. Personnel costs are also high, as Arctic production requires wages that attract professionals to work in the remote and isolated locations and to commit to shift work. The need to determine national boundaries and land use rights also has an effect upon the cost of developing Arctic deposits.

With regard to estimating the profitability of Arctic energy development, the regulatory aspects of licensing, subsidies, taxation and funding are also crucial. Four out of the five Arctic littoral countries, Russia being the odd one out, do not have restrictions on foreign equity participation in their oil and gas sectors. From this point of view the Arctic is attractive to international oil and gas companies, as access to resources in other parts of the world is much more limited due to the dominance of national energy companies in other resource-rich regions. Additionally, Arctic nation states could not benefit from the expensive exploration of the Arctic resources without participation of private capital. Yet, private companies interested in Arctic hydrocarbons are dependent on licensing policies (which have often been restrictive due to environmental concerns), tax arrangements (the US, Canada, Greenland, and Norway have profit-based, whereas Russia has a revenue-based tax regime), and subsidies (lower tax rate for offshore production and assets to attract capital investment) (Aalto and Jaakkola, 2015).

Currently, oil and gas production takes place in the Arctic zones of Russia, USA (Alaska), Canada (Northwest Territories), and Norway. A closer look into these cases reveals that despite a wide variety of actors' strategies and regulatory contexts, they have one unifying element: the significance of the public sector in providing infrastructural support for the projects. Due to permafrost conditions and long distances, the land connectivity by road and rail remains poor in the Arctic and, thus, the primary means of transportation for Arctic oil and gas is pipeline connection and shipping. The 800 mile long Trans Alaska Pipeline System (TAPS), connecting vast oil reserves in Prudhoe Bay to port Valdez (completed in 1977 as a joint venture of eight energy companies), would not have been possible without financial incentives from the state (Conley, 2013). In Canada, the federal government took a one-third financial interest in the construction of a pipeline connecting Northwest Territories (Norman Wells) to Zama in Alberta (Hamilton, 1994, p. 203). In the Soviet Union, between 1973-1986, a number of major pipeline projects were completed in order to connect oil and gas fields in Northwestern Siberia and Komi Republic (Timan-Pechora basin, Usa-Ukhta-Yaroslavl' pipeline) to the European part of Russia and Western Europe. The state was the sole financier and owner of this infrastructure given that the Soviet Union was, for most of this time period, a planned economy. Other large infrastructural projects remained only on paper, including *Alaskan Gas Pipeline* to commercialize Alaska's North Slope Natural gas, *The Mackenzie Valley Pipeline*, proposed to transport natural gas from the Beaufort Sea through Canada's Northwest Territories to northern Alberta, and *The Power of Siberia*, envisioned as a unified gas transmission system for the Irkutsk and Yakutia gas production centers to Vladivostok and further to Asian markets, leaving large Arctic fields undeveloped.

Arctic infrastructure projects, realized through sets of opaque and complex contracts between private investors and governments, highlight how, and the degree to which, states and markets are intertwined in Arctic energy development. Despite the decades of economic liberalization and privatization of the energy sector both in Western democracies and in Russia, the degree to which state actors are involved in energy markets remains significant. Yamal LNG, an industrial complex constructed during 2013-2016 for exploration, liquefaction and shipment of natural gas, is another case in point. As the project has faced significant cost overruns, the operating company Novatek had to secure additional funding through credits from state-controlled Sberbank and Gazprombank, as well as the Chinese Silk Fund which provided a 1,2 bln USD loan in connection with that company's acquisition of a 9,9 percent stake in the project (The Independent Barents Observer, 2016). In the Arctic, Russia's geopolitical leverage via energy is reflected through increasing securitization discourse in domestic politics and media (Gritsenko and Tynkkynen, 2016). More generally, Kuzemko (2014) argued that energy is a particular policy area where the engagement of the state policymaking actors has increased over decades as a result of increasing securitization, or including energy issues into the scope of national security concerns.

Comprehensive Arctic strategies adopted first by Arctic, and later by non-Arctic states, focus on generating an Arctic extractive economy, but so far the result of these political strategies has been an expansion of state economic activity through infrastructure development. In the historical analysis of extractive industries, Bunker and Ciccantell (2005) argue that most of the grand extractive projects would not have been possible without strong state support in the form of infrastructure development. These examples from the Arctic suggest that political issues interact with economic factors to determine energy transportation, such as pipelines, ports, and sea-lanes. This energy-related infrastructure not only incorporates the local into the global, serving as means of political influence and geopolitical competition, but also has a political impact at the local level in regional policy and planning. Since traditional lifestyles pursued by many Arctic indigenous peoples depends on reindeer herding and fisheries, tensions are likely to arise when pasture areas shrink due to infrastructure construction and maintenance, as well as raising levels of industrial pollution negatively affect fish populations. Thus, a relevant concern is that construction of energy-related infrastructure as a part of large-scale industrialization of the High North pursued by the Arctic states is prone to set a path for future Arctic development that will contradict to the policies aiming at social and environmental sustainability.

### **5. Arctic energy resources, climate change and energy transition**

The first wave of intensive commercial interest to Arctic oil and gas started in the 1970s and accelerated in response to the first oil crisis, of 1973, when considerations of energy security promoted and enabled expensive projects, such as the Trans-Alaskan pipeline. Following the 1979 crisis Norway opened up the north of the Norwegian Sea for further oil and gas exploration. Arguably, the most recent millennial optimism about Arctic hydrocarbon exploration is a continuation of these dynamics (Avango and Högselius, 2013). It has been prompted by a combination of a steady increase in oil price during the 2000-s, concerns over energy security due to tensions in Russia's energy relations with the EU, melting ice due to climate change, and the promise of "Arctic riches" after the publication of the USGS 2008. In the past 200 years, temperatures in the Arctic have escalated more than any other region on earth. In the interdependent global climate system, these Arctic changes are very likely to have detrimental effects on the rest of the world (Vihma, 2014). Thus, climate change



is not only an opportunity for large-scale resource extraction in the Arctic, but also a challenge to Arctic and global sustainability which, in its turn, can reduce viability for Arctic energy development (Harsem et al., 2011).

In this way, the recent spate of interest in Arctic mineral wealth marks a contradictory relationship between energy and environmental discourses (Palosaari and Tynkkynen, 2015). The ambitious goal of limiting global warming to below 2°C entailed in the Paris Agreement adopted at the 2015 Paris Climate Conference (COP21) infers a concrete need for a global energy transition. This in turn, given the best available knowledge on the dynamics of climate change, is incompatible with hydrocarbon development in the Arctic. Up until today, the Arctic has been a “net energy exporter” and the local use of energy, even in the form of fossil fuels, has made a marginal contribution to world GHG emissions, particularly in comparison to the use of Arctic-origin oil and gas elsewhere in the world. Thus the Arctic has been placed at the heart of climate debates, but effectively has little to offer the global energy transition besides “remaining untouched” – a decision over which ‘the Arctic’ as the region above the Arctic Circle has little decision making power.

Disconnecting Arctic from global energy flows, however, goes against the dominant colonial logic that has promoted Arctic exploration for the past four centuries. Resource colonialism is manifested not only through extending extractive frontiers, but also through interpreting industrialization as a form of development that benefits extractive communities by resolving economic underdevelopment (Bunker and Ciccantell, 2005). Energy companies in the Arctic have largely adopted a developmentalist rhetoric that views the industrialization of the Arctic as “bringing civilization”, primarily in form of infrastructure, to the remote communities in the region and thereby increasing social well-being (Tynkkynen, 2016). Tynkkynen has explained this rhetoric as a manifestation of energopower (ibid). In its ultimate form, the argument promulgated by the energy companies suggests that abandoning Arctic energy projects will throw the region and its communities back into the “underdeveloped” state and increase the vulnerability of local communities. Highlighting the role of capital and technology as a way to ensure a balance between socioeconomic and environmental aspects of Arctic development, this interpretation subordinates the Arctic periphery to the center while neglecting the contradictions between resource extraction and sustainable development highlighted above.

A different perspective on local, Arctic meanings of sustainability has been offered by NGOs, advocacy coalitions and academics who raised concerns over the future of the Arctic and the planet, in particular opposing exploration of Arctic oil and gas resources. Through a series of public campaigns, including the ‘Arctic Sunrise’ protest action organized by Greenpeace in 2013 against Arctic drilling at the Prirazlomnaya platform, activists attempted to draw media attention to the controversies related to Arctic hydrocarbon exploration, and to present distant consumers of fossil fuels with an understanding of the social and environmental impacts of Arctic energy. Critical scholarship disproved the conventional accounts of postindustrial society for their tendency “to underrepresent the continued significance of primary resources to the experience of everyday life” (Bridge, 2001, p. 2149), and demonstrated how Arctic energy developments restrict local inhabitants, including indigenous peoples, in carrying on with their livelihoods (Stammiller, 2005). At the same time, it shows that an extreme environmentalist desire of turning the Arctic into a global sanctuary is

also not a flawless plan, as it ignores the fact that the Arctic is home to four million people who want to preserve their traditional lifestyle while enjoying the latest advances of technology.

One way of re-thinking the Arctic energy development in a way that is compatible with the ideas of Arctic sustainability, rather than with discourses from outside the region, could be through local energy transition. Energy supply from renewable sources in remote off-the-grid areas can increase the resilience of Arctic communities, but also prevent path dependency associated with technological lock-ins created by large infrastructure (Hochstein, 2015; Collier, 2011). Self-sufficiency through renewable energy supply would offer an important alternative to reliance on energy infrastructures built within large energy development projects. Remote off-the-grid areas could benefit from renewable and hybrid (wind-diesel and solar-diesel) energy systems if policy incentives were to be put in place (Boute, 2016). Currently, renewable energy in Arctic communities is not more than a handful of pilot projects. It may be assumed, that in the early stage a combination of private and public finance could be the most viable option for creating demonstration cases and exploring the future business models. Yet, who will take a lead in pushing for Arctic energy transition remains to be seen.

## 6. Concluding remarks

Over the past four centuries, the quest for natural, in particular energy resources has been the major driver for Western peoples to penetrate and explore the Arctic region. Natural resource endowments have contributed to constructing the Arctic region as a “commodity-supply space” (Bridge, 2001). Populations of whales and other marine mammals, deposits of coal, oil and gas in the Circumpolar North have been interpreted as “Arctic riches” and exported as valuable commodities to distant consumer markets. Forces driving the incorporation of the Arctic into the global energy economy have come from outside the Arctic region – where benefits of the Arctic exploitation were mainly ripped off. Scarcity of local population has added to an image of the Arctic as a *terra nullius*, a people-less space that can be understood and discovered through geology and law. Severe climatic conditions have brought a romantic flavour to Western narratives of Arctic development as heroic exploration, making the High North an articulation of human bravery and technological progress. From whale oil to offshore drilling, the patterns of material production in the Arctic corresponded to international energy flows, embedding the history of Arctic exploration within human energy history more broadly.

Since the late 2000s, changes in the natural environment coupled with assessments of Arctic hydrocarbon deposits presented by geoscientists, attractive investment packages produced by energy consultancies, and the mounting energy needs of the developing world, have prompted advances in policies and technologies for extraction and transportation of Arctic resources. Discourses on energy policy articulated by actors from outside the Arctic produced an image of the Arctic as a “final extractive frontier,” defining the Arctic in a resource-geographical way. These discourses on “Arctic riches” embedded within the broader international political economy of energy acted as a form of entitlement to pursue extractive activities in the Arctic. As demonstrated in this Chapter, the concept of resource colonialism provides a powerful tool to deconstruct the complex web of expectations about Arctic energy futures. In particular, it shows how the remoteness of the Arctic from industrial and financial centers that has been previously leveraged through Arctic resource endowment has acquired a new dimension with ever-tighter incorporation of the Arctic into the global energy system.

Until recently, the degree of apparent resource availability in the Arctic has been the prime justification for investment into the large scale industrialization of the High North. Yet, the fact that oil and gas can be produced with greater ease and at less expense in many other parts of the world, together with the growing viability of alternative energy sources in the global energy mix and the global drop in oil price, have undermined interest in Arctic energy development. As peripheral Arctic was becoming global Arctic, its image as a remote resource base increasingly came into conflict with intensifying concerns over the environmental status of the Arctic and the planetary consequences of Arctic climate change. With the increasing salience of climate issues in global energy governance Arctic hydrocarbons are no longer considered solely as a source of energy, but also as a source of pollution. The shift from the “old” (extraction and consumption of fossil fuels) to the “new” (carbon markets and offsetting) carbon governance (Bridge, 2011) has also impacted the cost structure of Arctic energy, adding the cost of carbon mitigation to already costly exploration and transportation.

The core controversies of Arctic energy development result from the globalization of the Arctic made manifest through its becoming embedded within global commodity chains and global climate governance. Thus we are at the stage when the global Arctic is *simultaneously* seen as an empty space to be conquered and benefited from and, in strict contrast, as fragile space to be protected and preserved. The tension between these two narratives marks a significant change in the international political economy of energy that underpins contemporary postindustrial capitalism and offers an entry point into conversations that frame the energy-climate nexus as “carbon governance” (Bridge, 2011). Arguably, the ways in which material activities will be organized in the future is inherently connected to the political choices that prioritize the image of the Arctic as an extractive frontier or as a global sanctuary.

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